

NEW OR NOTEWORTHY TAXA OF *SENECIO* (ASTERACEAE) IN AUSTRALIA 1

by

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ABSTRACT

Belcher, R.O. New or noteworthy taxa of *Senecio* (Asteraceae) in Australia, 1. *Muelleria* 6(3): 173-179 (1986). — *Senecio garlandii*, a new species endemic to isolated rocky hillocks in the Central Western and South Western Slopes divisions of New South Wales, is described. *S. cahillii* Belcher and *S. tuberculatus* Ali are reduced to synonymy under *S. diaschides* Drury and *S. murrayanus* Wawra, respectively. *S. glaucophyllus* Cheeseman ssp. *discoideus* (Cheeseman) Ornd. is excluded from the flora of Tasmania.

INTRODUCTION

I report here a number of observations made during 1984 while locating and examining type and other material of all but two of the species published in *Senecio* and based on collections from Australia. This work involved visits to seven European herbaria (B, BM, G, K, LINN, P, W) and to the National Herbarium of Victoria (MEL) and the State Herbarium of South Australia (AD). At the latter institution I also had access to material loaned from ADW, CANB, CHR, HO, NSW, and PERTH to facilitate the revision of *Senecio* for the 'Flora of South Australia' by Dr Margaret Lawrence and myself.

TAXONOMY

Senecio garlandii F. Muell. ex Belcher, sp. nov.

Senecio dryadeus Sieber ex Sprengel, Syst. Veg. 3: 562 (1826), nom. invalid, ut syn., var. *garlandii* F. Muell. ex Maiden & Betche, Census New South Wales Pl. 205 (1916), nom. invalid.

Senecio sp. J (aff. *hypoleucus*), S.W.L. Jacobs & J. Pickard, Pl. New South Wales 86 (1981). [The suggestion of affinity to *S. hypoleucus* is incorrect.]

Suffrutex perennis, 1 (-2) m altus, ramosissimus e basi, rami ascendens. *Caules* dense lanati, plus minusve flexuosi. *Folia* sessilia, alterna, chartacea, ovata vel elliptica, obtusa vel apiculata, remote denticulata, plus minusve cordata et amplexicaulia, 8-15 x 3-9 cm, sursum diminuta; paginae inferne dense lanatae, superne sparse arachnoideae. *Inflorescentia* terminalis corymbosa; bractae multo reductae, amplexes subulatae; pedunculi arachnoidei, bracteolis subulatis. *Capitula* radiata congesta numerosa calyculata, bracteolis 5-7. *Involucrum* campanulatum; phyllaria 13, 4 mm longa, acuta, apicibus recurvatis. *Flosculi* marginali 7-10, ligulati; ligulae oblougae, ad 4 x 2 mm; flosculi disci 20-25. *Achenia* pallide brunnea, 2 mm longa, pilis brevibus glabrescentibus in sulcis angustis. *Setae pappi* graciles uniformes non persistentes.

Perennial *subshrub* to 1 (-2) m tall, much branched from the base, branches ascending. *Stems* densely lanate, more or less flexuous. *Leaves* sessile, alternate, chartaceous, ovate or elliptical, obtuse or apiculate, remotely denticulate, more or less cordate and amplexicaul, 8-15 x 3-9 cm, reduced upwards; lower surfaces densely lanate, upper surfaces sparsely arachnoid. *Inflorescence* terminal, corymbose; bracts much reduced, clasping, subulate; peduncles arachnoid with subulate bracteoles. *Capitula* radiate, congested, numerous, calyculate with 5-7 bracteoles. *Involucre* campanulate; phyllaries 13, 4 mm long, acute, with recurved apices. *Marginal florets* 7-10, ligulate; ligules oblong, to 4 x 2 mm; disc florets 20-25.

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Fig. 1. *Senecio garlandii*. Holotype (*Garland s.n.*, MEL 666712).

Achenes light brown, 2 mm long, with short hairs glabrescent in narrow grooves. Pappus bristles slender, uniform, not persistent.

Common name: Woolly Ragwort (see discussion).

TYPE COLLECTION:

New South Wales — "Wagga Wagga 1890", *Garland s.n.* (HOLOTYPE: MEL

666712. ISOTYPE: MEL 666711). The actual type locality is The Rock (formerly Hanging Rock) mountain, south-west of Wagga Wagga (see discussion).

SPECIMENS EXAMINED:

New South Wales — Hanging Rock Mountain, c. 26 km SSW. of Wagga Wagga, 35° 27' S., 147° 05' E., 19.xi.1965, *Phillips* (AD 97010435). Ibidem, 26.viii.1967, *Willis* (MEL 666706 & 666707; NSW). Ibidem, 16.i.1971, *Belcher 2084* (EMC). Summit of Tabletop Range (Mt. Lockyer), near Gerogery, 10.v.1969, *Willis* (MEL 666703 & 666704). At foot of range of hills called "Bob-in-the-box", c. 15 miles ESE of The Rock, 12.viii.1971, *Wilson* (MEL 666705). "Big Bush", Gidginbung, [34° 20' S., 147° 28' E.,] xi.1975, *Schlunke* (NSW 153245). Near Albury, 36° 06' S., 146° 54' E., 26.i.1975, *Sykes* (NSW 117786).

DISTRIBUTION:

New South Wales — Very local along the 147° E. meridian on the western slopes of the Dividing Range between West Wyalong and Albury. Apparently endemic to the sheltered lower slopes of isolated rocky outcrops.

DISCUSSION:

The actual type locality has been ascertained from a letter to Mueller which is preserved at the National Herbarium of Victoria. The letter, on the printed letterhead of "J. R. Garland, Solicitor, Wagga Wagga", is dated 30 December 1890 and is signed by Garland. He wrote: ". . . . I have not, until a few days ago had an opportunity of going out to the Hanging Rock for a further supply of the 'senecio'. I now send you some specimens from various parts of the plant, including some ripe seeds in heads. . . . All the plants which I have seen are growing amongst the rocks at the foot of the perpendicular face of the Hanging Rock Mountain and are thus sheltered from the westerly winds. . . ."

The "further supply" mentioned in Garland's letter is presumably subsequent to the 1890 material selected as type, and is represented by two sheets (MEL 666709! & 666710!) dated by Mueller as 1891, the year in which he would have received Garland's second consignment. An apparent duplicate of this second collection is NSW 117793 (!).

This taxon is the "species A ('garlandii' of F. Muell.)" of Lawrence (1980:153, table 1). She reported (p. 159) chromosome numbers of $n=30$ and $n=60$ from "morphologically indistinguishable plants", including *Lawrence 1480* (AD!), grown from cuttings taken from plants on The Rock. In cultivation in the glasshouse I found seedlings from *Belcher 2084* to be self-incompatible as are most radiate species of *Senecio* in Australia. I did not succeed in obtaining achenes from any of a number of attempted crosses both from and to other *Senecio* species.

This distinctive endemic has been frequently collected from The Rock since 1890, the specimens cited above being only a small fraction of those I have seen. It is therefore surprising that a description has not been published previously, especially since Mueller left at MEL the manuscript description (in English) which was alluded to by Maiden and Betche (*l.c.*). A major reason for this lack of a published description, no doubt, has been the confusion over what I have come to think of as the *Senecio linearifolius* complex, to which *S. garlandii* had been thought to belong. This complex includes the four forms of *S. linearifolius* A. Rich., briefly characterized by Lawrence (1980: 153), with chromosome numbers of $n=30$. The complex also includes an undescribed taxon from Mt Dangar, New South Wales which I believe to be a distinct species and for which I am preparing a description. Mueller himself had several successive different ideas on the affinities of *S. garlandii*, as shown by changes on his manuscript and by his annotations on Garland's material, before finally assigning it as a variety of the invalid *S. dryadeus* Sieber.

In my judgment *S. garlandii* is a good species, specifically distinct from the *S. linearifolius* complex because of its campanulate rather than cylindrical involucre, its much larger and clasping cauline leaves, and its densely woolly pubescence. In addition, it shares with *S. magnificus* F. Muell. and *S. pterophorus* DC. the presence in its capitula of an as yet unidentified substance which reacts with hot 85% lactic

acid. This reaction produces an intense brownish-black discoloration which interferes severely with effective clearing of peduncle, receptacle, phyllaries, and floret bases. Such a reaction was not exhibited by any of the several specimens referable to the *S. linearifolius* complex which I have cleared in hot lactic acid in a search for useful microcharacters in these parts. *S. garlandii* also appears to differ from all these other specimens in details of venation of the cleared phyllaries, but I have yet to quantify these differences or to show their consistency.

The name of this new taxon honors J. R. Garland, its first known collector. "Woolly Ragwort" is the name given to this plant in the trail guide to The Rock Nature Reserve issued by the local naturalists' society, and is most appropriate.

Senecio diaschides Drury, New Zealand J. Bot. 12: 522, fig 5 (1974).

Senecio cahillii Belcher, Muelleria 5(2): 120 (1983).

Drury described this species from a collection from the North Island of New Zealand, where it has become adventive in recent years along with the much more aggressive *S. bipinnatisectus* Belcher (*Erechtites atkinsoniae* F. Muell.). Both are native to the uplands of eastern New South Wales. In describing *S. cahillii* from Australia I overlooked Drury's prior publication. I have now examined material determined by Drury as *S. diaschides*, including an Australian specimen at Kew and the isotype (CHR 44758), and find the two taxa to be conspecific.

This species has apparently failed to maintain itself in the areas in southwestern Western Australia where it had previously appeared, probably as an introduction (see Belcher, *l.c.*, p. 122).

Senecio murrayanus Wawra, Itin. Princ. S.-Coburgi 2: 48 (1888) (as *S. murrayana*). HOLOTYPE: "Austral. Victoria/Murray Fl.", *s.d.*, Wawra 427 (W, 7 separate pieces on one sheet). ISOTYPE: "Murray River/1873/Dr Wawra" (MEL 671631).

Senecio tuberculatus Ali, Kew Bull. 19: 423 (1965). HOLOTYPE: BRI, *n.v.* ISOTYPES: South of Tara, Bullock Head Creek Road, on grey clay, Queensland, 28.viii.1958, Johnson 538 (K, NSW, CANB 63619).

This species, as Ali noted, is uniquely distinguished by its achene, which is large, long-necked, and densely papillose (Fig. 2.) The achenes of Wawra 427 are identical to those of the duplicates of Johnson 538 which I have seen. There is also a close resemblance between these type collections in other capitular details, as well as vegetatively. I have no doubt that these two taxa are conspecific.

Tap water added to a few papillae from the neck of an achene from Wawra 427 led to almost instantaneous enlargement and the extrusion of two elongated strands from each papilla. Examination by light microscopy at 50, 100 and 400x indicated clearly that each strand originated in a separate cell. Medial walls were evident. Thus these papillae are not different in principle from the much more slender bicellular hairs of other species of Australasian *Senecio*. The characteristic short basal cell is also present (cf. Drury & Watson 1965, figs 11, 12; *S. murrayanus* approaches fig. 12).

The papillae after imbibition measured 0.14-0.15 x 0.08 mm (ocular micrometer at 100x), an increase in size of roughly 25% from the dehydrated state. The extruded fibrous strands measured 0.45-0.55 mm long x 0.03-0.04 mm wide, were irregularly zigzag in outline, and were sticky. The latter feature would account for Wawra's description of the achene as mucilaginous, as attested by the fact that several capitula on his type specimen have masses of adherent achenes with tightly attached wads of fibres apparently torn from the paper used in pressing them.

The isotype of *S. murrayanus* at MEL consists only of a fragment of inflorescence with a single capitulum containing numerous ripe achenes. It was found in one of the supplementary bundles of Mueller's unidentified *Senecio*. It seems probable that Wawra visited South Yarra in 1873 and at that time broke off a piece from his collection for Mueller. This piece might therefore be better designated

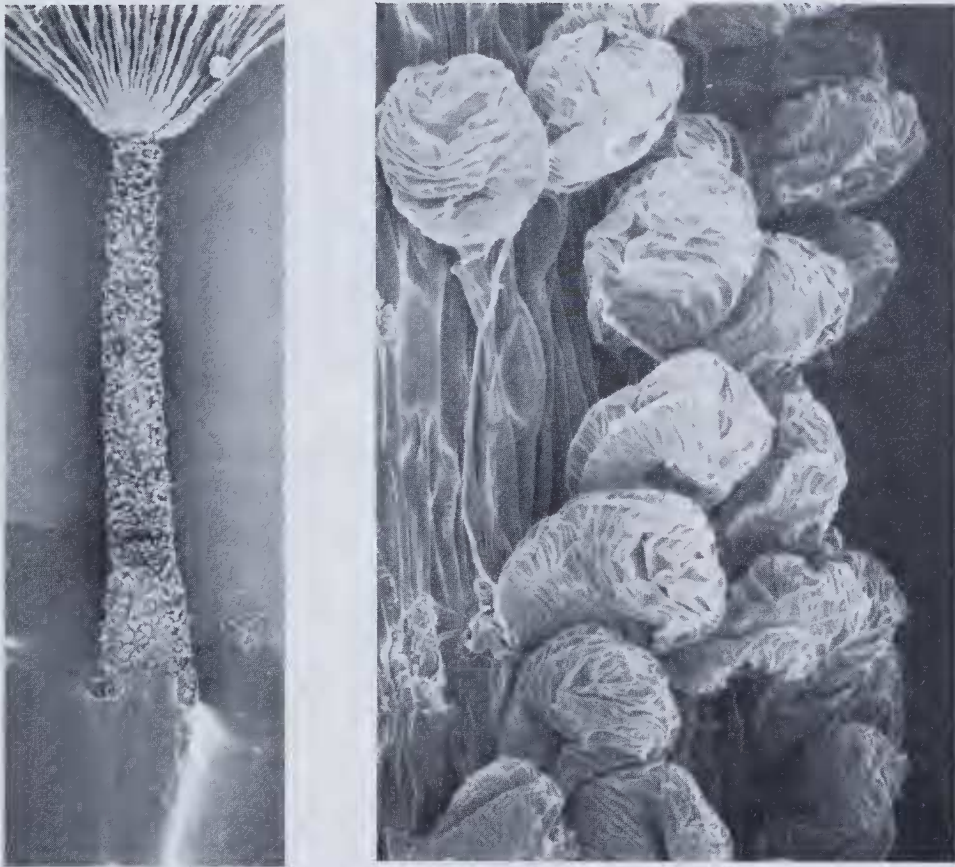


Fig. 2. *Senecio murrayanus*. SEM microphotographs. a.—whole achene (lower portion partially obscured by mountant) showing shape, papillae, and the bases of the persistent pappus bristles, x 15. b.—achene papillae, with some showing the edges of medial cell walls; the strong corrugations are apparently due to dehydration under vacuum, x 400. Both from the holotype, *Wawra 427* (W). SEM by courtesy of Mr Chris Edwards, Dental Research Institute, University of Michigan.

as a fragment of the holotype, but I could not confirm this as I had no opportunity to try to match ends. There apparently was no other distribution of duplicates.

Most of the numerous specimens of *S. murrayanus* which I located had been identified as *S. platylepsis* DC. (holotype G-DC!). There is some resemblance, especially with specimens having pinnatisect leaves (absent in *Wawra 427* holotype, present in *Johnson 538*), but the two taxa can be distinguished by the characters given in Table 1.

Wawra described the ligule as "alba"; Ali, as "pallide flava". There are no field notes with Wawra's specimen and nothing to indicate initial ray color. The ligules are now tawny, as are those of many old collections of species known to have yellow florets. Field notes that mention color on modern collections are few, and give the rays simply as yellow. The larger piece of *Everist 6219* from CANB, however, has rays that are quite pale and perhaps could have been reported as "alba". There seems no likelihood that Wawra's material had truly white rays such as are found (in Australian *Senecio*) only in *S. leucoglossus* F. Muell.

I have seen four collections from Victoria in addition to the type material; viz., Kerang, x.1887, *Minchin*; Pine Plains, W. Wimmera, 1889, *Davis*; Wimmera, 1890, *Eckert 184*; Northwestern District near Mallee, xi.1879, *Sullivan 27*; all these are

at MEL. Thus the provenance of "Victoria" given on the holotype label is apparently correct.

In addition to the listed isotypes of *S. tuberculatus* I have seen all of the material at NSW cited by Ali and duplicates of most of those he cited from BRI, plus numerous other collections from the several herbaria visited. These additional collections show that *S. murrayanus* has a broader distribution than that mapped by Ali (op. cit. 425, map 1). It has occurred widely scattered within the Murray-Darling watershed in southern Queensland, New South Wales, and Victoria, with outliers in northwestern Victoria, but apparently did not extend into South Australia. An outlying location, Thylungra, cited by Ali, is in southwestern Queensland in an area drained by a tributary of Cooper's Creek. A lack of twentieth-century collections from Victoria and west-central New South Wales, however, suggests a significant contraction in the range of this species.

Table 1. Diagnostic differences between *S. murrayanus* & *S. platylepsis*.

Characteristic	<i>S. murrayanus</i>	<i>S. platylepsis</i>
phyllary length	4-5.5 mm	7.5-9 mm
phyllary number	c. 20	11-13, rarely 20
ray-floret achenes	fully developed, plump	usually infertile, slender
achene shape	flask-shaped with long neck, even when immature	cylindrical in all stages
achene indumentum	obovoid papillae	long slender hairs
leaf margin	subentire to pinnatisect	lobate or lobulate, irregular

The distribution of *S. murrayanus* (except for the inclusion of Thylungra and the exclusion of South Australia) closely mimics that of *S. runcinifolius* J. H. Willis, although *S. murrayanus* does not appear to be as closely confined to riverine settings. The limited field notes suggest a tendency to weediness on cultivated grey clays and on overstocked brigalow country.

I have yet to see this taxon in the field, and I have not seen any reported chromosome count.

***Senecio glaucophyllus* Cheeseman ssp. *discoideus* (Cheeseman) Ornduff, Trans. & Proc. Roy. Soc. New Zealand 88: 73 (1960).**

Senecio lautus G. Forst. ex Willd. var. *discoideus* Cheeseman, Man. New Zealand Fl. 374 (1906).

Ali (1964, p. 289) reported an extension of range for this subspecies to Tasmania, based on "'Wilderness', Dysert, Jan. 1961, Winifred M. Curtis (HO 3890)". His identification of this collection is correct, but unfortunately the provenance was given incorrectly on the sheet. Dr Curtis has now indicated (*in litt.*) that the correct location and date of this collection are: Wilderness, Otago, New Zealand, January 1957.

"Cat. No. 3890", the number cited by Ali and applicable in the Herbarium, University of Tasmania, prior to the transfer of that herbarium to the Tasmanian Museum, is at the top of the sheet that now carries the number HO 14949. This sheet was annotated by Ali as *Senecio glaucophyllus* ssp. *discoides* [sic!] on 7 May 1963. A second sheet, HO 69514, contains one specimen of this taxon apparently demounted and transferred to it from the sheet annotated by Ali.

Senecio glaucophyllus ssp. *discoideus* is to be excluded from the flora of Tasmania, at least on the evidence of the above two sheets. Ali cited "T. Kirk", rather than Cheeseman, as the original authority for this infraspecific epithet. I do not find in the literature any support for this ascription.

ACKNOWLEDGEMENTS

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